
Festuca dinirica and *F. guaramacalana* (Poaceae, Loliinae), Two New Species from the Venezuelan Andes

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ABSTRACT. Two new species, *Festuca dinirica* Stančák and *F. guaramacalana* Stančák (Poaceae, Loliinae), from the Venezuelan Andes are described. *Festuca dinirica* is found in the páramo zone and seems best placed in subgenus *Festuca* sect. *Aulaxyper*; *Festuca guaramacalana* is found in humid mountain forests and belongs in *Festuca* subg. *Subulatae* sect. *Subulatae*. Both species are endemic to Venezuela, known from small areas of Dinira National Park and Guaramacal National Park, respectively.

RESUMEN. Se presentan dos especies nuevas, *Festuca dinirica* Stančák and *F. guaramacalana* Stančák (Poaceae, Loliinae), endémicas de los Andes de Venezuela. La especie *F. dinirica* pertenece al subg. *Festuca* sect. *Aulaxyper* y se conoce solo de la zona paramúna del Parque Nacional Dinira. La especie *F. guaramacalana* es un representante del subg. *Subulatae* sect. *Subulatae*, endémica de la zona del bosque húmedo altoandino del Parque Nacional Guaramacal.

Key words: Andes, endemic, *Festuca*, Loliinae, Poaceae, Venezuela.

The genus *Festuca* L. is a highly diversified cosmopolitan grass genus, represented by over 140 species (Darbyshire et al., 2003) in the Andes of South America and one extra-Andean enclave in southeastern Brazil and northeastern Argentina.

Revision of *Festuca* in Venezuela has resulted in recognition of two new species, *Festuca dinirica* and *F. guaramacalana*. Type collections of these new species come from recently organized field studies in little known regions of Dinira National Park (State Lara) and Guaramacal National Park (State Trujillo), and represent first collections of *Festuca* from these areas (for comparison, see Alexeev, 1986; Briceño & Morillo, 1994; Dorr et al., 2000; Vareschi, 1970). Both species appear to be endemic to the Venezuelan Andes.

Festuca dinirica belongs in subgenus *Festuca* L. sect. *Aulaxyper* Dumort. This section is represented by only a few (probably 2 to 4) species in South

America and remains insufficiently known. The geographically nearest species with clear affinity to section *Aulaxyper* is the markedly distinct species *Festuca andicola* Kunth from swampy habitats in Colombia and Ecuador.

Festuca guaramacalana belongs in subgenus *Subulatae* (Tzvelev) E. Alexeev sect. *Subulatae* Tzvelev represented in Venezuela by two other species (*F. ulochaeta* Nees ex Steudel and *F. coromotensis* Briceño). An artificial key for distinguishing these species is provided. The survey of known South American members of *Festuca* sect. *Subulatae* was published recently (Stančák & Peterson, 2002) and included eight species.

***Festuca dinirica* Stančák, sp. nov.** TYPE: Venezuela. Lara: Munic. Humocaró Alto. NP Dinira, 09°35'38.7"N, 70°07'12.2"W, 3170 m, 30 Nov. 2000, Stančák 4287 (holotype, PRC; isotypes, CAR, COL). Figure 1f–j.

Haec species a *Festuca toluensis* innovationibus mixtis non intravaginalibus, ligula foliari 0.5 (non 1.8–3.5) mm longa, foliis tenuioribus 0.3–0.5 (non 0.5–0.7) mm latis, glabris (non scabris), sclerenchymate abaxiali cum fasciculis vascularibus non junctis differt.

Tussocks, 50–60 cm tall; innovations mixed; culms erect, glabrous, with 1 to 3 nodes in basal half. Sheaths coriaceous-membranous, brownish gray, glabrous, fibrous; ligule 0.5 mm long, shortly ciliate; leaf blades linear, 20–30 cm long, 0.3–0.5 mm wide, involute, pungent, glabrous, green. Panicle contracted, lanceolate, 6–10 cm long and 0.7–1 cm wide; branches scabrous. Spikelets 8–10 mm long, lanceolate, with 3 to 4 perfect florets; rachilla scabrous or sparsely covered by hairs; glumes membranous, upper 1/3 scabrid; lower glume 3.5–4.2 mm long, lanceolate, acute, 1-nerved; upper glume 6–7 mm long, lanceolate, acute, 3-nerved; lemmas 6–7 mm long, 5-nerved, membranous, lanceolate, scabrous, awned; awn 1–3 mm long; callus glabrous; palea membranous, 2-carinate, scabrous, markedly 2-dentate, as long as lemma; lodicules lanceolate, 2-dentate; stamens 3, anthers 2–2.5 mm



Figure 1. a–e, *Festuca guaramacalana* Stančík (Stančík 4286, PRC). —a. Habit (bar: 9 cm). —b. Fragment of panicle (bar: 32 mm). —c. Spikelet (bar: 14 mm). —d. Glumes (bar: 7 mm). —e. Cross section of leaf (bar: 0.4 mm). f–j, *Festuca dinirica* Stančík (Stančík 4287, PRC). —f. Habit (bar: 5 cm). —g. Panicle (bar: 2.5 cm). —h. Spikelet (bar: 10 mm). —i. Glumes (bar: 9 mm). —j. Cross section of leaf (bar: 0.3 mm).

long; ovary apex glabrous. *Caryopsis* lanceolate; hilum linear, $\frac{3}{5}$ – $\frac{4}{5}$ of total. *Leaf blade section* with 5 vascular bundles and 3 to 5 ribs above; sclerenchyma under abaxial and adaxial epidermis discontinuous, vascular bundles free; adaxial epidermis with microhairs about 0.09 mm long.

Observations. Spikelet structure in the new species resembles *Festuca toluensis*, another frequent species of the Venezuelan páramos. However, *F. dinirica* differs clearly in organization of the tussocks (small, with mixed innovations in contrast to the big tussocks with intravaginal innovations of *F. toluensis*), in structure of sheaths (brown, striate, and fibrous sheaths in contrast to the stramineous and integrated sheaths), length of the ligule (0.5 mm vs. 1.8–3.5 mm), and in the anatomic structure of the leaves (abaxial sclerenchyma isolated and all vascular bundles free in contrast to the continuous abaxial sclerenchyma and some vascular bundles united with sclerenchyma).

The formation of the mixed innovations and brown, striate sheaths (partly disintegrated into fibers) make *Festuca dinirica* close to section *Aulaxyper*. In South America, this section is not very frequent and only poorly studied. The Colombian and Ecuadorian species *Festuca andicola* is (geographically) the nearest species with clear affinity to section *Aulaxyper*. *Festuca andicola* differs from *F. dinirica* by growing in swampy areas, forming only solitary culms with long rhizomes, and in having distinctive spikelets (lower glume 1.4–1.8 mm long vs. 3.5–4.2 mm; upper glume 2–2.5 mm long vs. 6–7 mm; lemma 5–5.5 mm long vs. 6–7 mm; awn 0.5–0.7 mm long vs. 1–3 mm; anthers 0.8–1.1 mm long vs. 2–2.5 mm).

Distribution and habitat. *Festuca dinirica* is endemic to Venezuela and known only from the type locality—Dinira National Park in Lara. This species forms small tussocks in shrubby-grassy páramos, associated with *Blechnum* L., *Espeletia* Mutis ex Bonpland, *Hypericum* L., *Calamagrostis* Adanson, *Chusquea* Kunth, *Rhynchospora* Vahl, etc., at an altitude of ca. 3200 m. No more information about the distribution of this species is available. It is probably steno-endemic and vulnerable to extinction.

The specific epithet refers to the type locality, Dinira National Park.

Paratypes. VENEZUELA. **Lara:** Humocaro Alto. NP Dinira, 09°35'38.7"N, 70°07'12.2"W, grass páramo with shrubby patches, 3170 m, 30 Nov. 2000, Stančík 4289 (CAR, COL, PRC), Stančík 4288 (CAR, COL).

KEY TO THE VENEZUELAN SPECIES *FESTUCA* SECT. *SUBULATAE*

- 1a. Lemma with awn markedly flexuous, 7–15 mm long 1. *F. ulochaeta*
- 1b. Lemma awnless or with straight awn 0.5–1 mm long 2
 - 2a. Spikelets 9–11 mm long, with 3 to 4 florets, awn 0–0.5 mm long 2. *F. coromotensis*
 - 2b. Spikelets 15–17 mm long, with 5 to 7 florets, awn 0.5–0.1 mm long 3. *F. guaramacalana*

Festuca guaramacalana Stančík, sp. nov. TYPE: Venezuela. Trujillo: Bocono, PN Guaramacal, 09°14'15.1"N, 70°11'14.3"W, 2880 m, 29 Nov. 2000, Stančík 4286 (holotype, PRC; isotypes, CAR, COL). Figure 1a–e.

Haec species a *Festuca coromotensi* ligula folii acuta non truncata, 1–1.5 (non 0.5–0.7) mm longa, spiculis 15–17 (non 9–11) mm longis, lemmate 9.5–10.5 (non 7.5–8.5) mm longo distinguitur.

Rhizomatous grass, forming small tussocks, 100–130 cm tall; innovations extravaginal; culms erect, glabrous, with 3 or 4 nodes in distal half. Sheath membranous-coriaceous, purplish brown, striate, fibrous at base, margins free; auricles absent; ligule 1–1.5 mm long, (coriaceous)membranous, acute; leaf blades linear, involute, 30–40 cm long and 0.6–0.7 cm wide, (olive-)green, glabrous. Panicle branched, flexuous, pendent, elongate, 15–20 cm long and 2–5 cm wide; branches finely scabrous. Spikelets narrowly lanceolate, 15–17 mm long, with 5 to 7 perfect florets; rachilla pilose; glumes purplish, narrowly lanceolate, acute, coriaceous-membranous, sparsely scabrous; lower glume 3.7–4.7 mm long, 1-nerved; upper glume 5–7 mm long, 3-nerved; lemmas coriaceous-membranous, lanceolate, 9.5–10.5 mm long, 5-nerved, purplish, apex entire, papillose, mucronate or shortly awned, the awn 0.5–1 mm long; callus sparsely pilose; palea two-carinate, finely pilose, almost as long as lemma, apex shortly two-dentate; lodicules ovate, two-dentate; stamens 3, anthers 2.5–2.8 mm long; ovary apex glabrous. *Caryopsis* lanceolate; hilum linear, $\frac{4}{5}$ of total length. *Leaf blade cross section* with ca. 11 vascular bundles and 5 ribs above; sclerenchyma under both abaxial and adaxial epidermis discontinuous; unit with some vascular bundles forming girders, bulliform cells absent; adaxial epidermis with scattered microhairs, 0.09 mm long.

Observations. This new species belongs to the section *Subulatae*, and among the South American members of this section *Festuca guaramacalana* has the largest spikelets and longest glumes (Stančík & Peterson, 2002). Similarly, as in the case of *F. sodiroana* Hackel ex E. B. Alexeev and versus

typically long awns elsewhere in section *Subulatae*, the lemma is only shortly awned (0.5–1 mm). Morphologically, *Festuca coromotensis* B. Briceño appears to be the most similar with truncate (vs. acute), shorter ligules (0.5–0.7 mm long vs. 1–1.5 mm), shorter spikelets (9–11 mm long vs. 15–17 mm) with 3 to 4 (vs. 5 to 7) florets, and a shorter lemma (7.5–8.5 mm long vs. 9.5–10.5 mm).

Distribution and habitat. This species is endemic to Venezuela. It is known only from the type collection from the National Park Guaramacal (Trujillo), where it occurs at the margin of a brook with *Neurolepis* Meisner and *Cortaderia* Stapf in Andean mountain forest, at about 3000 m. This species probably occurs rarely, as no additional exemplars were found in the field or in herbarium collections. It is possibly a steno-endemic species vulnerable to extinction.

The specific epithet refers to the type locality region, Guaramacal National Park.

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